George Bornemissza

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George Francis Bornemissza OAM (born **György Ferenc Bornemissza**; 11 February 1924 – 10 April 2014) was a Hungarian-born entomologist and ecologist. He studied science at the University of Budapest before obtaining his PhD in zoology at the University of Innsbruck in Austria in 1950. At the end of that year he emigrated to Australia. There he first worked in the Department of Zoology at the University of Western Australia for 3 years, before pursuing a career with the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Bornemissza was known for his work on the Australian Dung Beetle Project (1965–1985) while working at CSIRO's Division of Entomology. He wrote scientific papers and books base on his research and contributed a collection of mounted beetle specimens to the Australian National Insect Collection and the Tasmanian Museum and Art Gallery. In 2001 he was awarded the Medal of the Order of Australia for his services to Australian entomology.

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George Bornemissza
OAM

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Born	György Ferenc Bornemissza 11 January 1924 Baja, Hungary
Died	10 April 2014 (aged 90) Australia
Nationality	Australian citizen
Alma mater	University of Innsbruck
Known for	The Australian Dung Beetle Project
Awards	Medal of the Order of Australia 2001
Scientific career	
Fields	Entomology, Biology, Ecology, Agricultural Science
Institutions	University of Western Australia, Commonwealth Scientific and Industrial Research Organisation, University of Tasmania

Early life and education [edit source]

Bornemissza was born in Baja, Hungary, to Katalin Bornemissza and Ferenc Bornemissza, an engineer.[1] He began collecting and studying beetles in the forests around his hometown during his mid-teens and also volunteered in museums and scientific institutions in Budapest.[2]

Career and research [edit source]

Early career [edit source]

After receiving his doctorate from the University of Innsbrück in Austria, Bornemissza fled central Europe to escape the post-World War II Soviet regimes and travelled to Western Australia, where he arrived on 31 December 1950.[1] Six months after arriving on Australian shores, while working with the Department of Zoology at the University of Western Australia,[3] he remarked upon the large number of old, dry cow dung pads that covered cattle grazing fields near Wooroloo, Western Australia[4] and compared this to the relatively dung-free cattle fields of his native Hungary. In Hungary and elsewhere in the world, dung beetles have adapted to be able to roll and bury large, moist cattle dung pads but native Australian beetles, which co-evolved alongside the marsupials, were not able to utilise bovine dung, since cattle were only relatively recently introduced to Australia in the 1880s. Bornemissza hypothesised that the introduction of foreign dung beetle species that were able to roll and bury cattle dung pads would aid not only Australia's soil fertility by recycling the dung nutrients back into the ground, but would also reduce the number of pestilent flies and parasitic worms which use the dung pads as a breeding ground.[1] Bornemissza joined CSIRO in 1955[3] and continued to advocate for the introduction of bovine dung beetles to Australia whilst working on a number of other projects and studies.[1] The Australian Dung Beetle Project subsequently secured funding from the Australian Meat Research Committee and commenced in 1965.[5]

Beyond his work in entomology, during the 1950s and 1960s Dr Bornemissza was also a keen amateur filmmaker. In 1962 he won the Kodak Trophy for the 8mm Best Australian Entry at the Australian Amateur Cine Society 23rd International Gold Cup Competition for his entry "The Burning Bush", a documentary on the effect of bushfires on Australian ecosystems which made extensive use of time lapse photography.[citation needed]

The Australian Dung Beetle Project 1965-1985 [edit source]

From 1965, Bornemissza travelled extensively in search of suitable dung beetles to introduce to Australia.[6] The first dung beetles to be introduced to Australia came from Hawaii, where beetles had already been introduced from Africa in order to biologically control populations of the pestilent horn fly. Samples of the species *Onthophagus gazella* were transported to Australia where they were bred in sterile conditions before being released in Queensland in 1968. After introduction, they became established across a large area of tropical Australia.[5]

It was realised that due to periods of seasonal inactivity by *O. gazella*, further beetle species were needed to fill in the gaps in climatic and habitat preference and peak time of beetle activity. To this end, Bornemissza travelled to Pretoria in 1970 where he helped establish a South African branch of the Australian Dung Beetle Research Unit. For 9 years,[7] he carried out research in order to find species of dung beetle that would not only be able to remove the bovine dung pads in Australia, but also those that would thrive in the varying climates found all over the continent. It was also important that the beetles chosen, and the tiny parasites that the beetles carry, would not themselves become pests and so strict quarantining procedures were devised and developed.[8] In total, 43 species of beetle from Africa and Europe were introduced to Australia by CSIRO between 1968 and 1984.[7]

Project Outcomes and Impact [edit source]

The funding for the Australian Dung Beetle Project was withdrawn in 1985 after the restructuring of the Australian Meat Research Committee, but Bornemissza believed that the full potential of the project had yet to be realised.[citation needed] He said, *"The introduction of exotic dung beetles and their subsequent establishment in Australia is now history, and a very successful one at that. However, it fell short in filling all the climatic areas with their vast variety of habitats"*.[citation needed] This last statement was made in a report by Penny Edwards in 2007, which summarised investigations made by Landcare Australia to evaluate the distribution and abundance of introduced species of dung beetle across Australia. The investigation found that 23 of the 43 species of dung beetle introduced by Bornemissza and his team were still established and thriving all over Australia, and it recommended that further research be carried out in order to fill the empty ecological niches with new species of introduced dung beetle.[citation needed] The work Bornemissza and his team undertook with the Australian Dung Beetle Project is credited with being the reason why Australians today can enjoy a terrace café culture.[3] The success of the project in reducing the number of bush flies by 90% has meant that outside dining is no longer illegal, as it once was in the 1950s.[3] The "Australian Salute", a flick of the hand recognised by older generations of Australians as the only solution to rid oneself of flies at that time, is now a dwindling gesture.[9][10] The Australian Dung Beetle Project is also said to have affected soil, water and pasture health that is *"undoubtedly worth many millions of dollars a year"*.[11]

Retirement and further work [edit source]

Bornemissza moved to Tasmania in 1979 and formally retired in 1983 but continued to work privately to foster awareness of beetles and conservation issues.[2][1] In retirement he compiled a collection of beetles for public display, which he donated to the Australian National Insect Collection in Canberra.[12] Following this 3-year project he commenced in 1993 a 20-year private project to assemble the largest collection of beetles ever presented for public display. Entitled *George Bornemissza's Forest Beauties of the Beetle World: A Tribute to Biodiversity and an Appeal for its Preservation*, the collection is structured into five sections focussed on size range, allometry, colour, secondary sexual dimorphism and zoogeography. As the sections were completed they were donated to the Tasmanian Museum and Art Gallery.[2][13] The Bornemissza Collection of beetles was the subject of an episode of the TV show "Collectors" shown on the Australian television channel ABC in 2005.[14]

Bornemissza also contributed to habitat conservation initiatives in Tasmania. He assessed, with Karyl Michaels, the effect of clearfelling and slash-burning of forest on lucanid beetles in Tasmania. These beetles feed on and reproduce in decaying wood and it was found that forest clearing practices have led to a significant decrease in the distribution and abundance of several species.[citation needed] Some, including Bornemissza's Stag Beetle (*Hoplogonus bornemisszai*), are now considered endangered species and improved forest management strategies in Tasmania are recommended.[15]

Bornemissza died in Australia on 10 April 2014 at age 90.[16][17]

Awards and honours [edit source]

Bornemissza received several awards including:

- Kodak Trophy for the 8mm Best Australian Entry, Australian Amateur Cine Society 23rd International Gold Cup Competition 1962[citation needed]
- Fellowship of the Von Humboldt Society[13]
- Britannica Award Gold Medal, 1973, For his application of ecology for human benefit[6]
- Rolex Award for Enterprise, 1981, honourable mention for his project *Dung Beetles against Pasture Pollution*[10][18]
- Medal of the Order of Australia, 2001, For service to science and entomology, particularly through the ecological study of dung beetles and the introduction of new species to Australia[19]
- CSIRO Service from Science Award, 2003, in recognition of his dedication of time and effort to improve our knowledge of our insect biodiversity[12]
- Emeritus Fellow of Entomology, CSIRO, 2006[10]
- Australian Geographic Conservationist of the Year 2008[20]

Eponymy [edit source]

Several species of beetle and other insects have been named after Bornemissza, including:[21]

1. *Carbrunneria bornemisszai* Princis, 1954
2. *Osa bornemisszai* Paramonov 1958
3. *Polyparuopus bornemisszai* Remy, 1961
4. *Symphylella bornemisszai* Scheller, 1961
5. *Ipomyia bornemisszai* Colless, 1965
6. *Beierolpium bornemisszai* Beier, 1966
7. *Pseudotyrannochthonius bornemisszai* Beier, 1966
8. *Esentomon bornemisszai* Tuxon, 1967
9. *Copris bornemisszai* Ferreira, 1968 (synonym of *Copris bootes* Klug, 1855)
10. *Neosisyphus bornemisszai* Ferreira, 1968 (synonym of *Neosisyphus infuscatus* Klug, 1855)
11. *Onthophagus bornemisszai* Matthews, 1972
12. *Onthophagus bornemisszanus*, Matthews, 1972
13. *Temnoplectron bornemisszai* Matthews, 1974
14. *Setoppia bornemisszai* Balogh, 1982
15. *Sisyphus bornemisszanus* Endrödi, 1983
16. *Acutozetes bornemisszai* J. & P. Balogh, 1986
17. *Clambus bornemisszai* Endrödy-Younga, 1990
18. *Hoplogonus bornemisszai* Bartolozzi, 1996
19. *Viracochiella bornemisszai*, Balogh & Mahunka, 1996
20. *Lissotes bornemisszai*, Bartolozzi, 2003

Publications [edit source]

Bornemissza is the author or co-author of a number of articles in the field of entomology. His work has appeared in a range of journals and books including *Nature* and the *Australian Journal of Zoology* and was published between the years 1956 - 1999.

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